

What Is Claimed Is:

1. A living body light measuring device comprising:

a light irradiating source for irradiating light into  
5 a living body which is a subject of study;

a light condensing detector for condensing living  
body passage light for detection, when light irradiated by  
said light irradiating source passes through the interior  
of said living body,

10 a stimulus device from which a stimulus is  
intermittently applied to said subject;

a noise detection device so that if it is detected that  
said living body passage light detected contains noise  
associated with body movement of said subject, a signal  
15 derived from said living body passage light detected in an  
arbitrary period is excluded from a measured signal by a  
signal processor.

2. A living body light measuring device comprising:

20 a light irradiating source for irradiating light into  
a living body which is a subject of study;

a light condensing detector for condensing living  
body passage light for detection when light irradiated by  
said light irradiating source passes through the interior  
25 of said living body,

a stimulus device wherein a stimulus is  
intermittently provided to said subject;

a noise detector from which on the basis of detected  
noise associated with body movement of said subject in said  
5 living body passage light detected, a direction is given to  
the stimulus device to control a stop and start of the  
stimulus applied and to control a number of times of said  
stimulus to be given to said subject which has been  
programmed in advance and said stimulus application is  
10 changed based on the movement of the subject.

3. A living body light measuring device comprising:

a light irradiating source for irradiating light into a  
living body which is a subject of study;

15 a light condensing detector for condensing living  
body passage light to be obtained, for detection, when light  
irradiated by said light irradiating source passes through  
the interior of said living body,

a stimulus device from which a stimulus is  
20 intermittently given to said subject, and on the basis of  
noise associated with body movement of said subject in said  
living body passage light detected by said detector a number  
of times of a stimulus to be given to said subject which has  
been programmed in advance will be changed.

25

4. The living body light measuring device according to Claim 1, further comprising:

a band pass filter for causing said measured signal to pass through a predetermined frequency band,

5 a display screen for inputting a parameter which sets said frequency band of said band pass filter, and where on said display screen, a frequency characteristic of said signal is also displayed at the same time when said band of said band pass filter is set to aid in setting the frequency  
10 band of the band pass filter.

5. The living body light measuring device according to Claim 4, wherein on said display screen, a signal of a time domain is displayed at the same time.

15

6. The living body light measuring device according to Claim 5, wherein said parameter inputted on said display screen and said display of said signal of the time domain are in synchronization with each other in real time.

20

7. The living body light measuring device according to Claim 1, wherein from an amount of change in an arbitrary time interval in a time domain of a value corresponding to an amount of change in hemoglobin concentration or a change in  
25 hemoglobin concentration of said measured signal measured

within unit time, a noise level associated with body movement which a signal measured is determined.

8. The living body light measuring device according to Claim  
5 7, further comprising:

a criterion value parameter for judging a noise level associated with body movement present in said signal measured;

a graph for representing a characteristic of said  
10 criterion value parameter; and

a display screen for displaying a statistic of said characteristic.

9. The living body light measuring device according to Claim  
15 7, further comprising:

a display screen for setting a criterion value for judging a noise level associated with body movement present in said signal measured;

and a display screen for displaying a signal graph in  
20 the time domain in which said criterion value is reflected in real time.

10. The living body light measuring device according to Claim 2, further comprising:

a band pass filter for causing said measured signal to pass through a predetermined frequency band,

a display screen for inputting a parameter which sets said frequency band of said band pass filter, and where on  
5 said display screen, a frequency characteristic of said signal is also displayed at the same time when said band of said band pass filter is set to aid in setting the frequency band of the band pass filter.

10 11. The living body light measuring device according to Claim 3, further comprising:

a band pass filter for causing said measured signal to pass through a predetermined frequency band,

a display screen for inputting a parameter which sets  
15 said frequency band of said band pass filter, and where on said display screen, a frequency characteristic of said signal is also displayed at the same time when said band of said band pass filter is set to aid in setting the frequency band of the band pass filter.

20

12. The living body light measuring device according to Claim 2, wherein from an amount of change in an arbitrary time interval in a time domain of a value corresponding to an amount of change in hemoglobin concentration or a change  
25 in hemoglobin concentration of said measured signal

measured within unit time, a noise level associated with body movement which a signal measured is determined.

5 13. The living body light measuring device according to Claim 3, wherein from an amount of change in an arbitrary time interval in a time domain of a value corresponding to an amount of change in hemoglobin concentration or a change in hemoglobin concentration of said measured signal  
10 measured within unit time, a noise level associated with body movement which a signal measured is determined.

14. The living body light measuring device according to Claim 12, further comprising:

15 a criterion value parameter for judging a noise level associated with body movement present in said signal measured;

a graph for representing a characteristic of said criterion value parameter; and

20 a display screen for displaying a statistic of said characteristic.

15. The living body light measuring device according to Claim 13, further comprising:

a display screen for setting a criterion value for judging a noise level associated with body movement present in said signal measured;

and a display screen for displaying a signal graph in  
5 the time domain in which said criterion value is reflected in real time.

16. A method for controlling the timing of sound stimulus in an optical imaging system used to image a living body of  
10 a subject under study comprising:

setting a predetermined number of sound stimulus applications to be applied over a time period to a subject sufficient to produce a measurement signal from optical  
15 radiation applied to the subject which is directed into the subject's body and detected by a detector and which shows the subject's reaction to the sound stimulus;

detecting in a detector whether said subject's body makes a movement by detecting noise in said measurement  
20 signal;

stopping the stimulus if body movement noise is detected in the measurement signal by sending a discontinue signal of the sound stimulus under execution currently; and

sending a signal for setting the time of the next sound  
25 stimulus to be transmitted to a stimulus control device;

wherein a time period between termination of each sound stimulus and the next sound stimulus presented is adjusted to be a minimal time period to provide a movement free measurement signal in a minimum amount of time including the predetermined number of sound stimulus applications to be applied because no useless sound stimulus time is expended when the subject is moving and is not stabilized.

10